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ABSTRACT

The data collected from the in-school and three follow-up surveys of the National Longitudinal Study of the High School Class of 1972 have been merged and processed. Results are being presented in a series of reports designed to highlight selected findings in educational, career, and occupational development. This report focuses on students who were in the top quarter of their graduating class in academic ability but who had not entered college four and one-half years after high school graduation. In particular, the report presents information about the potential reasons for nonattendance and the current activity states of these highly able students. For comparison purposes, results are also presented for those of other ability levels. Study findings indicate that the effects on and of college attendance are basically similar for all ability levels. Where differences exist, they are quantitative rather than qualitative, suggesting that similar factors affect and are affected by college attendance but that they operate and are operated upon to a different extent for the highly able student. (Author/GK)

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Contractor Report

Highly Able Students Who Did Not Go To College

TM 820 227

National Center for Education Statistics

Highly Able Students Who Did Not Go To College

Center for Educational Research and Evaluation

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August 1981

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FOREWORD

The National Longitudinal Study of the High School Class of 1972, a survey initiated by and conducted for the National Center for Education Statistics (NCES), began in spring 1972 with over 1,000 in-school group administrations of survey forms to a sample of approximately 18,000 seniors. In the several follow-up surveys, the sample included almost 5,000 additional students from sample schools that were unable to participate in the base-year survey.

The data collected from the in-school and three follow-up surveys have been merged and processed. Results are being presented in a series of reports designed to highlight selected findings in educational, career, and occupational development. This report focuses on students who were in the top quarter of their graduating class in academic ability but who had not entered college four and one-half years after high school graduation. In particular, the report presents information about the potential reasons for nonattendance and the current activity states of these highly able students. For comparison purposes, results are also presented for those of other ability levels.

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A final word of acknowledgement and an expression of gratitude is due to the many persons in the Federal government and at RTI who assisted in planning and implementing the National Longitudinal Study of the High School Class of 1972; to the more than 20,000 young adults who took the time and effort to provide comprehensive, detailed information about their lives; and to the participating high schools that made it possible to initiate the study in 1972.

ABSTRACT

Recent surveys indicate that a large proportion (more than one in five) of students in the top ability quartile of the high school graduating class do not attend college. Due to the implications of this talent loss, at both the individual and national level, this study was initiated in an attempt to identify factors related to college attendance by able students and to see how highly able students who did not attend college fare in the world of work. For comparison, low and middle ability groups also were considered.

In modeling college attendance, five major constructs were considered: individual and family background factors, high school academic credentials, educational expectations, life values, and early marriage. The five constructs jointly accounted for only about one-third of the variation in college attendance of high ability (or other ability level) students. Of the constructs, only the life values variable set (as measured by three fairly weak scales) failed to show a unique relationship to college attendance at any ability level. For the remaining constructs, the factors related to college attendance for highly able students were generally similar to and directionally consistent with those for other ability groups. Some differential relationships were observed among the three ability levels, but they typically reflected only a difference in the extent to which a factor was associated with college attendance.

Low educational expectation was the strongest unique predictor of college nonentry among high ability students; this factor alone accounted for roughly 30 percent of the variation in college going. Educational expectation was also the strongest predictor of college going at other ability levels, but was markedly less predictive for low ability students than for the high or middle ability groups. Early marriage also was strongly related to not attending college, and the effect was about twice as large for the highly able as for other ability levels.

As a group, the academic credential variables also were quite predictive of college going; of the four variables in this set, only number of high school science courses showed no unique relationship at any ability level. Lower high school class rank and fewer high school math courses characterized the highly able noncollege group, and these relationships did not differ statistically from those for other ability groups. A nonacademic high school

program was a strong unique predictor of college nonentry for middle and low ability students, but no such direct effect was observed for the highly able. When considering indirect effects, however, high school program was also predictive for the high ability group.

Among the background factors, race/ethnicity was consistently nonpredictive of college entry regardless of ability level. Sex was predictive only for the highly able. When other variables were controlled, highly able males were less likely to attend college than females; however, when indirect effects were considered, the female advantage in attendance was reversed. Lower socioeconomic status also signaled a decreased likelihood of attending college for the highly able, but the effect was over twice as great for the middle ability group than for either of the extreme ability groups (high or low).

In examining other life outcomes as potential consequences of ability and college attendance, family formation indices and job outcomes four and a half years after high school graduation were considered. Results indicate some group differences, but the differences were related more strongly to college attendance than to ability. Only one major difference in family formation existed between highly able students who did not go to college and noncollege groups of less ability; the highly able were less likely to have become parents. Family formation indices did show clearcut and fairly intuitive differences as a function of college entry (highly able students not attending college had married at about twice the rate and had become parents at about five times the rate of their college-going counterparts), but such differences are obviously timebound.

The examination of job outcomes indicated few differences as a function of either college attendance or ability level; however, these results should be considered inconclusive, since the time point examined represents a very early point in the career of these young people, particularly those who attended college (in fact, many were still in college and thus unrepresented in the job outcome analyses). The major difference within the noncollege group was that those of high ability were more likely than those of middle or low ability to have aspired to (as high school seniors) and to have attained (by October 1976) a professional or technical career; however, at all ability levels college goers were much more likely than nongoers to have both aspired to and attained such careers. Those highly able students who had not attended

college defined themselves out of the work force at about twice the rate of those who had attended, but did not differ in this respect from noncollege groups of lower ability. Of those in the work force, employment rates did not differ as a function of college going or ability, and there were no systematic differences between the college and noncollege groups or among ability levels in hours worked, earnings, or job satisfaction.

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I. INTRODUCTION

A. Background and Purpose of the Study

Educational and occupational development of young people has always been an important concern to educators and policymakers. A number of studies have been conducted over the years to identify factors that are related to young people's entry into higher education and their subsequent educational and occupational attainment (e.g., Astin, 1965; Bailey and Collins, 1977; Bowers, et al., 1977; College Entrance Examination Board, 1974; Thomas et al., 1977). These studies have been particularly concerned with the equality of educational opportunities for women, ethnic minorities, and students of low socioeconomic status (SES). Social pressures, government assistance, and the efforts of individual institutions have been directed toward making college more available to less advantaged youths, and several recent studies have shown that differences in access to higher education have been narrowing between men and women, as well as among SES and ethnic groups (cf., Peng, et al., 1977).

Recent studies also have shown repeatedly that a large proportion of highly able students do not go to college (Peng, 1977). For example, over 22 percent of the 1972 high school class (about 20 percent of the men and 25 percent of the women) who were in the top ability quartile did not attend college during the four and one-half years after high school graduation. In terms of personal development and subsequent use of their talents, and in terms of enhancing the development of our nation's manpower resources, advanced technologies, skills, and knowledge, it would seem desirable for those able students to enter college and complete a higher education degree. Studies have shown, in fact, that the proportion of highly able young men entering college has declined, although there has been an increase in the rate of college entry among able women in the lowest SES quartile (Peng, 1977). Thus, it seems appropriate to ask why so many able students do not go to college. Is it because of the lack of financial support or inadequate academic preparation? Is it because of the lack of motivation for higher education as a result of factors such as a tight labor market for college graduates or a career choice that does not require a college education? Are the factors related to college attendance among able students the same as those

for students of other ability levels? It also seems appropriate to ask what eventually happens to the highly able students who do not go to college. Do they find ways to put their talents to social and personal use? How different are they, with respect to early career attainment and family life, from those of other ability levels who did not attend college and from highly able students who entered college?

This report is intended to address these questions. Answers to the set of questions concerning college attendance could help to reveal barriers to higher education among able students. Answers to the questions of early career attainment could help in evaluating the extent to which an able student's talent is lost if he does not attend college, and could also yield some evidence regarding the value of a college education. It should be noted that, while the first set of questions can be adequately addressed with the current data, the second set of questions (particularly those involving the college-going group) can be addressed fully only with data that cover a longer period of time. Nonetheless, the present study can provide preliminary suggestions of early career attainment and family life.

B. Data Source

The data for this study were drawn from the National Longitudinal Study of the High School Class of 1972 (NLS). Sponsored by the National Center for Education Statistics, the NLS is a long-term educational research program. Its mission is to discover what happens to young people after they leave high school, as measured by their subsequent educational and vocational activities, plans, aspirations, and attitudes, and to relate this information to their prior personal and educational experiences.

The full-scale study began in the spring of 1972. A national probability sample of over 19,000 seniors from 1,061 public, private, and church-affiliated high schools was selected, and over 18,000 of those seniors participated in the base-year survey. Each student was asked to complete a student questionnaire and a 69-minute test battery. Background information for each student plus information about the school's programs, resources, and grading system also was collected from school records. In addition, school counselors were asked to complete a special questionnaire designed to provide data about their training and experience.

The first follow-up survey was conducted from October 1973 to April 1974. Added to the base-year sample were about 4,450 students of the class of 1972 from 249 additional high schools that had been unable to participate earlier. Some 21,350 young people completed a First Follow-Up Questionnaire. A second follow-up survey was conducted from October 1974 to April 1975, and 20,872 young people completed the survey questionnaire. The third follow-up survey was conducted from October 1976 to April 1977, and 20,092 persons completed the survey questionnaire.

Although the primary focus of this study is on highly able students, analyses have considered students of other ability levels for the purpose of comparison. Of the total NLS base-year participants with available test scores, 4,052 were in the top quarter, 7,000 in the middle two quarters, and 4,788 in the bottom quarter of general academic ability.[1/]

C. Weighting and Significance Testing

The NLS data base results from a highly stratified, multistage cluster sample. Each case must therefore be weighted by the inverse of its probability of selection to obtain unbiased estimates of population parameters. The percentages, means, and standard deviations presented in this report are all based upon properly weighted estimates. The standard errors of sample statistics from this complex design are larger than those obtained in a random sample. For example, standard errors of proportions can be approximated as a function of the estimated proportion, the sample size, and the estimated design effect (i.e., the ratio of the sampling variance of the statistic for this sample to the sampling variance of the statistic for a simple random sample of the same size). Approximate standard error of proportions in this report can be obtained by the following equation,

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1/ The academic ability index was derived from a standardized composite of four base-year test scores: Vocabulary, Reading, Letter Groups, and Mathematics. The cutting points for defining quartiles were based on a weighted estimate of the test score composite mean and standard deviation, and the assumption that the weighted frequency distribution was normal. Because low SES students were oversampled and SES is correlated with ability, more than 25 percent of the unweighted number of sample members actually fell into the low quartile of the ability composite.

$$S.E.(p) = \sqrt{\frac{p(1-p)}{n}} \cdot \sqrt{D},$$

where p is the proportion, D is the design effect, and n is the actual sample size. Analogous expressions exist for standard errors of means, expressed in terms of standard deviations, n, and D (see Kish, 1957; Kish and Frankel, 1970). The general design effect for proportions in this study is estimated to be approximately 1.35; thus, the usual standard errors should be multiplied by $\sqrt{1.35}$, about 1.16.

To contrast two subpopulation proportions, $d = p_1 - p_2$, the standard error of the difference is approximated by taking the square root of the sum of the squares of the standard errors for p_1 and p_2. This approximation does not account for the subtraction of the covariance term for p_1 and p_2 in the estimation formula; however, in comparing two subclasses of students, the covariance term tends to be positive because of the positive correlation introduced by the sample clusters of 18 students per school. Since the effect of such a positive correlation would be to reduce the standard error of the difference, the suggested approximation typically will be conservative.

It should be noted that the significance tests of proportions and proportion differences employed in this report are based on the normal approximation to the binominal distribution, which is based on assumptions that may not hold for small sample sizes or extreme proportions. Further, while standard errors for means, proportions, and differences in means and proportions did account for the general design effect (see above), exact standard errors (incorporating effects of stratification and clustering for the specific statistic under consideration) were not computed. As such, it is appropriate, as a general rule, to interpret reported standard errors as somewhat nonconservative. For regression solutions, design effects were not incorporated in analysis; consequently, reported standard errors for various regression and correlation parameter estimates are even more likely to be nonconservative. Because of the large sample sizes, the number of statistics reported, and the suspected nonconservative nature of standard errors, a .01 level of Type I error probability is used throughout as the criterion for statistical significance.

D. An Overview of the Report

The remainder of this report is organized into three sections. Section II focuses on the question of why many highly able students did not go to college. The presentation includes a conceptualization of the problem, specifications of measurement, and the results of three approaches to analysis. Section III examines the current activities of highly able individuals, with a focus on their job attainment, job satisfaction, and family formation. The major findings are summarized and discussed in Section IV. Supplementary results, included in Appendix A, are appropriately referenced in the text.

II. REASONS FOR COLLEGE NONATTENDANCE

A. Conceptualization

As indicated earlier, a substantial proportion of highly able students of the class of 1972 did not go to college; about 22 percent of students who were in the top quarter of academic ability had not attended college in the four and one-half years following high school graduation. A logical extension of investigation is to inquire why such able students did not go to college. General factors influencing college nonattendance such as low socioeconomic status and inadequate academic credentials, as determined from the entire NLS data base (see Peng, Bailey, and Eckland, 1977) may be equally applicable to the subset of highly able students. On the other hand, the factors associated with college attendance in the highly able group may differ, qualitatively or quantitatively, from those operating at other ability levels. To investigate these issues, several sets of analyses were conducted using three ability groups: (1) students in the top quarter of general academic ability (i.e., highly able students); (2) students in the middle two quarters; and (3) students in the bottom quarter.[2/]

Regardless of ability level, entry into college is assumed to be a complex process, involving a number of such interrelated individual factors as academic credentials for college, social and economic deprivation, and motivation or interest.[3/] A fair number of the highly able young people simply may have never obtained the academic credentials for attending college due to factors such as failure to enroll in a college preparatory curriculum in high school or having a low class rank. In addition to credential inadequacy, it is possible that many of those not attending might have had more social or economic handicaps than their counterparts who attended college. It is also likely that many highly able students simply did not aspire to college; some might have been oriented toward occupational success in areas for which they

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[2/] This quartile classification was derived from an ability composite computed from base-year test data (cf., Dunteman, Peng and Holt, 1974; Levinsohn et al., 1978, Appendix O).

[3/] Other contextual factors could be considered such as formal and informal counseling on college entrance and available financial aid, or entry requirements of specific colleges to which application may have been made. While such factors were not examined directly, they are probably reflected to varying extents in the variables considered.

believed that a college education would not increase their opportunities.

Of course, these factors may be interrelated, and such relationships need to be explicated. One model attempting to describe these interrelationships is presented in Figure 1. The ordering of the variables is dictated by a hypothesized causal structure linking one variable with another or by temporal considerations. The longitudinal nature of the data base is a strong feature of the study, since the temporal sequence of variables allows a more defensible explanation of process variables that affect college entry.

The model assumes that college attendance of highly able students, and other students as well, is a result of the direct or indirect "influence" or "effect" of social background (sex, race/ethnicity, SES), academic credentials, life values, educational aspirations, and marital status. Some of these influences are also assumed to be mediated through other variables.

B. Measurement Specifications

Variables involved in the model are specified as follows:

(1) Sex: Female was assigned a value of 1; and male, 0.

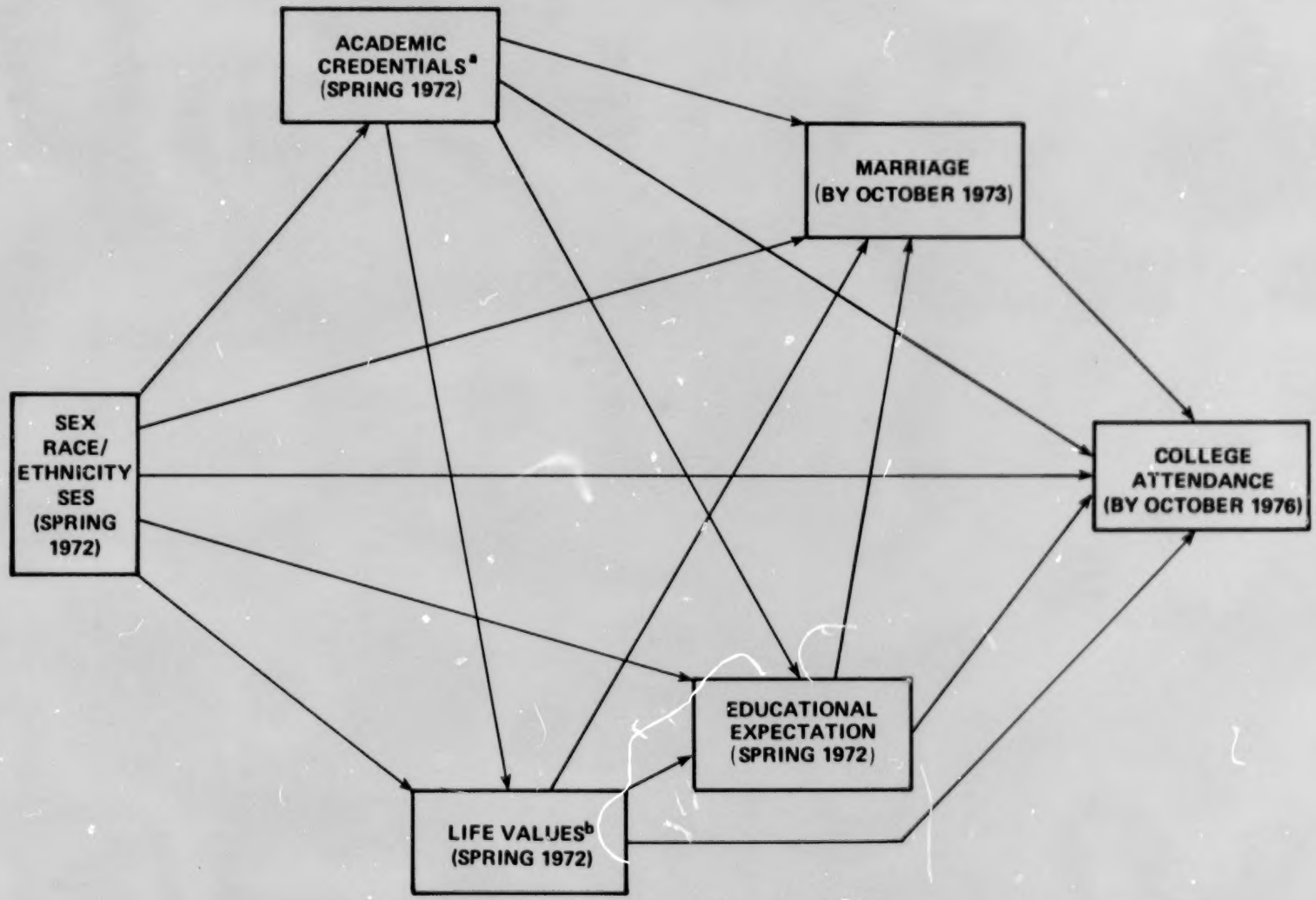
(2) Race/ethnicity: Majority white was assigned a value of 1; and all minorities, 0.

(3) Socioeconomic Status (SES): SES was based upon a composite of base-year data on father's education, mother's education, parental income, father's occupation, and a household items index. Factor analysis, in which missing components were imputed as the mean of the subpopulation of which the respondent was a member (defined according to cross-classification of race/ethnicity, high school program, and aptitude), revealed a common factor with approximately equal loading for each of the five components. As a result of the suggested equal component weighting, available (nonimputed) standardized components were averaged to form an SES score, when at least two nonimputed components were available. A high score indicates a high SES (see Dunteman, et al., 1974).

(4) Academic Credentials: The variables used as measures were:

(a) High School Class Rank: Student percentile rank obtained from the school record information.

(b) High School Curriculum Program: Based on student questionnaire information, students in college preparatory (academic) programs were assigned a value of 1, and those in general vocational or technical programs were assigned a value of 0.


ACADEMIC CREDENTIALS[a] (SPRING 1972)
MARRIAGE (BY OCTOBER 1973)
SEX RACE/ ETHNICITY SES (SPRING 1972)
COLLEGE ATTENDANCE (BY OCTOBER 1976)
EDUCATIONAL EXPECTATION (SPRING 1972)
LIFE VALUES[b] (SPRING 1972)

a/ Measured by: (a) high school class rank; (b) high school curricular program (academic vs. nonacademic program); (c) total number of science courses taken in high school; and (d) total number of math courses taken in high school.

b/ Measured by: (a) work scale; (b) family scale; and (c) community scale.

(c) Total Numer of Science Courses taken in high school.

(d) Total Number of Mathematics Courses taken in high school.

(5) Life Values: Three scales were derived from the base-year items measuring the importance of several life values. The three scales and their items were:

(a) Work Scale:

Being successful in my line of work

Having lots of money

Being able to find steady work

(b) Community Scale:

Being a leader in my community

Being able to give my children better opportunities than I have had

Working to correct social and economic inequalities

(c) Family Scale:

Finding the right person to marry and having a happy family life

Living close to parents and relatives

Getting away from this area of the country (scored in opposite direction)

Each item had three response options: "not important," "somewhat important," and "very important," coded respectively as 1, 2, and 3. The item composition of the scales was based on the results of a factor analysis of the coded goal-related items (see Dunteman, et al., 1974). The reliability coefficients, as measured by coefficient alphas, were .53, .44, and .30 for the work, community, and family scales, respectively.

(6) Educational Expectations: Measured during the base year, this variable tapped the highest educational level a student planned to attain. It was scored as follows: less than high school graduation = 1; graduate from high school = 2; vocational education beyond high school = 3; attend junior college = 4; attend 4-year college = 5; attend graduate or professional school = 6.

(7) Marriage: Marital status was obtained from first follow-up data and indicates status as of October 1973. Never married was coded 0; currently or previously married was coded 1.

(8) College Attendance: This was obtained from third follow-up responses to the question, "As of the first week of October 1976, what

was your highest level of education or training?" Responses indicating college programs (excluding vocational, trade, or business school) were coded 1; other responses were coded 0.

C. Comparisons of the College and Noncollege Groups

Some insight into potential determinants of college enrollment among the highly able group may be gained from inspection of Tables 1 and 2, which show differences in the background variables (as defined in the previous subsection) between those who had enrolled and those who had not. Both tables provide data for college and noncollege groups within each of the three ability categories. The tables differ principally in the nature of the variables considered; Table 1 presents percentages for dichotomous variables, while Table 2 presents means and standard deviations for the continuous and quasi-continuous variables. Both tables also provide effective sample sizes and weighted estimates of population sizes.[4/]

Though somewhat limited by the fact that interrelations among the background variables are not considered in this approach, the descriptive results are, nonetheless, of interest. Some fairly intuitive relationships between the background variables and ability categories are plainly indicated in the two tables. The percentages of those who are majority white and unmarried, and who participated in an academic high school program, increase monotonically from low to high ability. Similarly, SES, high school class rank, math courses taken, science courses taken, and educational expectations are monotonic increasing functions in ability. The percentage of individuals attending college (computable from the weighted totals of the two tables) is also seen to vary widely as a function of ability level; the approximate attendance rates are 78, 46, and 21 percent for high, medium, and low ability categories, respectively.[5/]

"Talent loss," as defined in this report, refers to the 22 (i.e., 100-78) percent of the high ability students who do not go to college. From Tables 1 and 2 it can be seen that these individuals differ substantially from their high ability peers who do go on to college on most of the major sets of variables considered. Among the background variables, SES appears to be a major

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[4/] The information provided is sufficient for computation of standard error estimates, using the procedures specified in subsection I.C.

[5/] Percentages computed from effective sample sizes are quite similar.

Table 1.--Comparisons of college and noncollege groups within each ability level (percentages for dichotomous background variables)

Background variables	High ability		Middle ability		Low ability	
	College	Non-college	College	Non-college	College	Non-college
Sex						
Percent male	52.36	44.94*	52.53	46.54*	50.19	51.30
High school program						
Percent academic	81.35	49.26*	56.43	20.51*	31.70	9.12*
Race/ethnicity						
Percent majority white	93.52	95.72	85.28	88.94*	50.98	64.80*
Marital status (Oct. 1973)						
Percent never married	96.06	75.56*	92.74	73.51*	87.47	70.36*
Sample size	2,957	816	2,961	3,311	900	3,081
Weighted total	634,319	181,731	610,437	720,596	154,541	596,573

* Percentages for the college and noncollege groups are statistically different at the .01 level of significance.

NOTE.--Standard errors for each proportion point estimate were obtained as $\sqrt{p(1-p)/n} \cdot \sqrt{D}$, where D is a generalized design effect of 1.35. Standard errors for differences in two point estimates were estimated as the square root of the sum of squared standard errors of the separate point estimates (i.e., zero covariance assumed).

Table 2.--Comparisons of college and noncollege groups within each ability level (means and standard deviation for continous background variables)

Background variables	High ability		Middle ability		Low ability	
	College	Non-college	College	Non-college	College	Non-college
SES	.47 (.67)	.00* (.60)	.18 (.67)	-.18* (.56)	-.23 (.72)	-.42* (.58)
High school class rank	75.7 (20.7)	64.8* (24.1)	56.2 (23.9)	46.7* (24.2)	42.2 (23.8)	31.5* (21.9)
Total math courses	5.18 (1.71)	4.16* (1.84)	4.21 (1.89)	3.33* (1.84)	3.50 (1.79)	2.79* (1.71)
Total science courses	4.73 (1.89)	3.95* (1.89)	3.84 (1.80)	3.05* (1.68)	3.11 (1.59)	2.70* (1.50)
Family scale	.91 (.42)	.89 (.42)	.93 (.42)	.95 (.44)	.95 (.42)	.95 (.45)
Work scale	2.42 (.40)	2.41 (.40)	2.54 (.34)	2.52 (.35)	2.61 (.34)	2.59 (.33)
Community scale	2.04 (.47)	1.99* (.44)	2.15 (.45)	2.08* (.44)	2.28 (.45)	2.17* (.44)
Educational expectation	5.12 (.76)	3.61* (1.28)	4.65 (1.00)	3.05* (1.14)	4.23 (1.17)	2.77* (1.12)
Sample size	2,957	816	2,961	3,311	900	3,081
Weighted total	634,319	181,731	610,437	720,596	154,541	596,573

* Means of the college and noncollege groups are statistically different at the .01 level of significance.

NOTE.--Cell entries are means and standard deviations (in parentheses). Standard errors for each mean point estimate were obtained as $\sqrt{s^2/n} \cdot \sqrt{D}$, where s is the standard deviation and D is a generalized design effect of 1.35. (It should be noted that the value of the generalized design effect was established principally for proportions and that for continuous variables, such as those reported in this table, the true design effect is probably greater than the value indicated; consequently, standard errors estimated using the value 1.35 are probably nonconservative.) Standard errors for mean differences were estimated as the square root of the sum of squared standard errors of the separate means (i.e., zero covariance assumed).

factor in differentiating high ability college goers from those in the talent-loss group, who are over two-thirds of a standard deviation lower. In addition, there are significantly fewer males in the talent loss group. Those in the talent loss group also are characterized by poorer academic preparation and credentials: over two and one-half times more likely to have been in a nonacademic high school program, 11 percentiles (about half a standard deviation) lower in class rank, and having taken about one course less in both science and math (about half a standard deviation lower in both instances). Individuals in the talent-loss group also have considerably lower (over 1.5 standard deviations) education expectations and greater variability in these expectations. Further, they are six times as likely to have married before or within a year following high school graduation; however, with one marginally significant exception, the life values scales fail to discriminate between high ability college goers and nongoers.

Few of the differences between college goers and nongoers are unique to those of high ability, however. Within each ability category, college goers are characterized by greater proportions of individuals who had participated in an academic high school program and who had not married by the second October following high school graduation, and by higher average levels of SES, high school class rank, math courses taken, science courses taken, and educational expectations. The family and work scales do not differentiate the college goers and nongoers at any ability level and suggest no clear trend over the ability categories. Those attending college do show slightly but significantly higher community scale values than the noncollege group within each ability category, and the scale values are monotonic decreasing from low to high ability.

Three variables--SES, sex, and race/ethnicity--suggest an interaction with ability in differentiating college enrollment. The proportion of males in the college-going group is greater than that in the noncollege group, within both the high and middle ability category, but this is not the case for the low ability category. Further, while differences in the racial/ethnic composition of the college and noncollege groups are directionally consistent for each ability category (greater proportions of majority whites in the noncollege group) the difference is not significant in the high ability category. Finally, while college goers are characterized by significantly higher SES than nongoers at all ability levels, SES differences are greatest at the high ability level and least at the low ability level.

On balance, these descriptive results suggest that, in general, similar factors are associated with college going regardless of ability level, although not necessarily to the same extent, even though these factors also vary with ability. Compared to college goers, those who had not gone to college have poorer academic credentials, higher rates of early marriage, lower educational expectations, and lower socioeconomic status (in the latter case an interaction with ability level is suggested). With the exception of the community scale, the life value scales do not appear to be associated with college going or ability level. Sex and race/ethnicity, on the other hand, are not consistently associated with college going in all ability categories.

D. Simultaneous Prediction of College Attendance

A major weakness of the descriptive approach presented in the previous subsection is that interrelationships among the several background variables are not considered. Correlation coefficients indicating both the relationships among the background variables and the relationships of those variables to college attendance are provided in Appendix A (Tables A.1, A.2, and A.3) for each ability level. The nature of these bivariate relationships is relatively similar within ability level.

To determine the unique relationships of the background (predictor) variables to the college attendance outcome, the interrelatedness of the predictor variables was taken into consideration through a multiple regression approach.[6/] In conducting these analyses, all continuous variables, with the exception of SES, were rescaled to facilitate interpretation of the intercept terms.[7/] The rescaling produced a realistic base group (i.e., a group represented by a value of 0 on all variables), for which the intercept term represents the mean of the outcome variable.[8/] The base group thus established represents never-married, minority males who took three math and three science

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[6/] Potential interaction terms were not considered in the regression model.

[7/] Some of the continuous variables (educational expectations, family, work, and community scales) have no zero value; while zero values exist for other continuous variables, such values represent extreme (and atypical) values, excepting SES.

[8/] The rescaling was basically a centering of the origin to a value near the grand mean vector. This transformation is linear, involving the subtraction of a unique constant from each variable, and thus affects only the value of the intercept term in the regression solution.

courses in a nonacademic high school program, who attained a high school class rank of 50 percent, who expected to attend a junior college (unscaled value of 4), and who had composite scores of 0, 1, 2, and 2.5 on SES, family scale, community scale, and work scale, respectively.

1. Results

The overall predictiveness of the regression model, as applied to the three separate ability levels, can be observed in the coefficients of determination (the squared value of the multiple correlation coefficient) provided in Table 2. These values may be interpreted as the proportion of criterion variable variance explained by the regression model considered; they indicate that only about a third of that variability is predictable. While the values of R^2 are not overly impressive in an absolute sense, they are even less impressive when compared to the prediction that could have been obtained from the single most predictive variable in the model, educational expectation. From Tables A.1 through A.3, it can be determined that the coefficients of determination for that variable alone are .303, .348, and .203 for the high, middle, and low ability levels, respectively.[9/] Thus, the increases in percent of variability predicted by adding the other 11 predictor variables are .033, .048, and .073, for the high to low ability levels, respectively. While all such increases are statistically significant (which should not be surprising, given the large sample sizes),[10/] they do not represent particularly large prediction gains in either an absolute or relative sense (with the possible exception of the low ability level).

9/ These values are obtained by squaring the zero order correlation coefficient between educational expectation and college attendance.

10/ The actual statistical test performed was for the significance of reduced prediction by removing all variables, other than educational expectation, from the full regression model. The test statistic used was

$$\hat{F} = \frac{N-k-1}{g} \left\{ \frac{R_k^2 - R_{k-g}^2}{(1-R_k^2)} \right\},$$

where N is the sample size (which varies with ability level), k is the number of predictions in the full model (i.e., 12), g is the number of predictors removed (i.e., 11), and R_k^2 and R_{k-g}^2 are the coefficients of determination for the full and reduced (single variable) regression models, respectively. Under certain assumptions, this test statistic is distributed as F with g and N-k-1 degrees of freedom.

The estimated regression coefficients (with associated standard errors) for predicting college attendance from the selected background variables, within each of the three ability levels, also are presented in Table 3.[11] Given the specific coding of the dichotomous criterion variable, the intercept for each ability level can be interpreted, without serious misconception, as the likelihood of attending college for those in the base group (defined above); other coefficients can be interpreted similarly as increases or decreases (depending on the sign of the coefficient) in the likelihood of college attendance for each unit increase in the rescaled value of the associated predictor variable. Under this interpretation and using rescaled values, the entries of Table 3 can be used, within the additive regression model, to predict the likelihood of college attendance for any particular group of interest.[12]

Table 4 provides some insight into the magnitude of effects of the several background variables by indicating the predicted change in the likelihood of college attendance resulting from specified changes in the predictor variables, within each of the ability levels. Both Table 3 and Table 4 are somewhat misleading, however, in determining the relative importance of the predictors, either within or between ability levels, since the values presented in those tables are based on raw values of the variables, which are differentially variable (see Tables 1 and 2). Relative importance is best indicated by standardized regression coefficients (expressing increases in a standardized criterion for a unit increase in the standardized predictor).[13]

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[11] These analyses were conducted assuming unit weights and simple random sampling; as a result, standard errors tend to be nonconservative.

[12] For example; the likelihood of college attendance for high ability females with an SES score of 2 and a high school rank of 75, taking 6 math courses, expecting to attempt only vocational education (rescaled value of -1), and otherwise identical to the base group would be .665; that is,

$$\underset{[BASE]}{.634} + \underset{[SEX]}{.042(1)} + \underset{[SES]}{.044(2)} + \underset{[HS\ RANK]}{.001(25)} + \underset{[MATH]}{.016(3)} + \underset{[EXPECTATIONS]}{.172(-1)}.$$

[13] Standardized and nonstandardized regression coefficients are simply related as $B_i = b_i\ (s_y/s_{x_i})$, where B_i is the nonstandardized coefficient for predictor X_i, b_i is the standardized coefficient, s_y is the standard deviation of the criterion variables, and s_{x_i} is the standard deviation of predictor X_i.

Table 3.--Estimated regression coefficients and associated standard errors for predicting college attendance within ability levels

Regression parameters	Ability level		
	High	Middle	Low
Intercept[a/]	.634	.522	.440
Predictor variables	.042†	-.014*	-.018
Sex--female[b/]	(.014)	(.014)	(.023)
Race/ethnicity--	-.007	-.046	-.057
majority white[b/]	(.026)	(.019)	(.025)
SES	.044†	.092*†	.037
	(.009)	(.011)	(.019)
High school program--	.023	.096*†	.141*†
academic[b/]	(.016)	(.015)	(.029)
High school class rank	.001†	.002†	.002†
	(.000)**	(.000)**	(.000)**
Total math courses	.016†	.009	.020†
	(.004)	(.004)	(.007)
Total science courses	-.005	.004	-.003
	(.004)	(.004)	(.008)
Family scale	.006	.001	-.039
	(.015)	(.016)	(.026)
Work scale	-.013	-.035	-.043
	(.016)	(.020)	(.036)
Community scale	.017	.000	.033
	(.014)	(.015)	(.027)
Educational expectation	.172†	.168†	.117*†
	(.007)	(.006)	(.009)
Marital status 1973--	-.227†	-.125*†	-.105*†
married[b/]	(.023)	(.018)	(.025)
R^2--Coefficient of determination	.336	.396	.276
Sample size	3,773	6,272	3,981

[a/] Based on rescaled values of predictor variables (see text).

[b/] Variables indicated are dichotomous classifications that have been coded 0, 1; the category coded as 1 is indicated.

* Differs statistically from high ability group at the .01 level of significance.

** In rounding to three decimals, the value is .000, which implies a standard error less than .0005.

† Regression coefficient differs statistically from zero at the .01 level of significance.

NOTE.--Table entries are raw regression coefficients and standard errors (in parentheses). Estimates and tests of significance are based on assumptions of simple random sampling; standard errors tend to be nonconservative, since design effects were not taken into account.

Table 4.--Predicted change in likelihood of college attendance for three ability levels as a function of changes in individual predictor variables

Predictor variable	Change in predictor variable	Predicted change in likelihood of college attendance		
		High ability	Middle ability	Low ability
Sex	Male to female	+.04*	-.01	-.02
Race/ethnicity	Minority to majority white	-.01	-.05	-.06
SES	Increase of two standard deviations[a/]	+.06*	+.12*	+.05
High school program	Nonacademic to academic	+.02	+.10*	+.14*
High school rank	Increase of 50 percentiles	+.05*	+.10*	+.10*
Total math courses	Increase of four courses	+.06*	+.04	+.08*
Total science courses	Increase of four courses	-.02	+.02	-.01
Family scale	Increase of one scale unit	+.01	.00	-.04
Work scale	Increase of one scale unit	-.01	-.04	-.04
Community scale	Increase of one scale unit	+.02	.00	+.03
Educational expectation	High school graduate to college graduate	+.52*	+.50*	+.35*
Marital status	Single to married	-.23*	-.12*	-.10*

* Underlying regression coefficients are statistically different from zero at the .01 level of significance.

[a/] Computable from the entries in Table 2.

NOTE.--Table entries are derived from regression parameters provided in Table 3.

These standardized coefficients are presented in Appendix A (final column of Tables A.4, A.5, and A.6).

Although the relative importance of predictors generally varies with ability level, the most predictive variable in the full regression model remains educational expectation, within each level. The only other predictors that are among the five most predictive for each level are marital status and high school rank. While the overall prediction of college attendance is significant for each ability level, it can be seen from Table 3 that not all of the individual regression coefficients differ significantly from 0 (significant coefficients are indicated by a dagger, †). While not strictly appropriate, ignoring such nonsignificant coefficients facilitates interpretation of results, particularly differences among the ability levels.[14/] Also, while an overall test for homogeneity of regression was not conducted, pairwise tests for significance of regression coefficient differences between the high ability group and other levels were performed. Significant differences are indicated in Table 3 by an asterisk (*).

The intercept terms, representing the means of the base group (see above), reflect differences in the likelihood of college attendance as a function of ability when the remaining factors are held at constant values. Although standard errors are not reported for the intercept terms,[15/] the increase in the intercept with increasing ability is fairly intuitive.

[14/] It should be recognized that the inability to reject nullity of a value is not equivalent to the establishment of true nullity and that the individual nullity of each of several regression coefficients is not equivalent to the nullity of the several variables considered simultaneously. Moreover, if the assumption of nullity of the nonsignificant coefficients were accepted as a constraint of the regression model, then the regression coefficients of the remaining terms would more than likely differ somewhat from the values given in Table 3.

[15/] The post hoc rescaling of the predictor variables allows simple computation of the intercept that would be obtained using the rescaled values; however, computation of the exact standard error of the intercept involves complex expressions of the variance-covariance matrix. Since the rescaling closely approximated a centering of all variables to a mean of zero, a nonconservative estimate of the standard error of the intercept is given by $\sqrt{s^2 (1-R^2)/n}$, where s^2 is the variance of the criterion variable (computable from the entries of Table 1), and R^2 is the coefficient of determination (Table 3).

Among the background variables (sex, race/ethnicity, and socioeconomic status), none shows consistent unique prediction of college attendance at all ability levels; in fact, race/ethnicity is not predictive at any ability level. Increasing SES predicts an increase in college attendance for the high and middle ability levels, more so at the latter level; for those of low ability, SES is not a statistically significant predictor, even though the direction and magnitude of prediction is quite similar to that for the high ability level. Sex is a significant predictor only for high ability students, indicating a predicted increase in attendance for females.

Among the set of variables related to academic credentials, only number of science courses fails to predict college attendance for any ability level. High school rank, on the other hand, shows a consistent prediction of increased college attendance for all ability levels. The remaining academic credential variables are predictive in only two ability levels. Number of math courses consistently predicts increased attendance for the high and low ability students; being in an academic high school program is also associated with increased attendance for middle and low ability students.

Of the three life values variables considered, none predicts college attendance uniquely, but both educational expectation and marital status predict attendance at all ability levels. Not surprisingly, higher expectations are associated with increased attendance; however, the predicted attendance increase for a given increase in expectations is not as great for low ability students as for other ability levels. Early marriage depresses the likelihood of college attendance at all ability levels, but the effect among high ability students is approximately double that for other ability levels.

2. Discussion

There are obvious similarities among ability levels in the unique relationships of the predictor variables to college attendance (i.e., no directionally inconsistent relationships; five consistently nonpredictive variables [race/ethnicity, number of science courses, and the three life values scales]; and one consistently predictive variable, high school rank). Nonetheless, the regression solutions are sufficiently different within the three ability groups to suggest differential effects of some predictor variables within the high ability group.[16/]

[16/] No direct test for homogeneity of regression was performed, however.

There are a large number of plausible explanations for the regression solutions and differences, not the least of which involve limitations of the data and/or the particular regression model. There is little doubt that some important personal determinants of college attendance (e.g., motivational factors) are either not included in the set of variables considered or not adequately reflected in the particular measures employed (e.g., the life value variables, in particular). Further, the conceptual model and the regression model adopted do not account for interactive effects of the variables; some such interactions might be expected on an intuitive level or as a result of prior research. As an example, interactive effects on college attendance by sex, race/ethnicity, and SES are likely; also, interactive effects by high school program and number (as well as type) of math and science courses taken may be reasonably postulated. Finally, individual characteristics cannot be considered as the only determinants of college attendance. Characteristics of the institution(s) to which application is made (particularly selection criteria) and the nature of high school counseling programs are also potential determinants. There is certainly no reason to expect invariance of the regression parameters for the variables considered if additional variables (either individual or contextual) and/or interactions were included in the regression model. Despite obvious limitations of interpretation, some of the differential effects across ability levels do lend themselves to rational (although not uniquely rational) explanation.

The greater likelihood of women attending college within the highly able group, controlling for differences in other variables, is not paralleled at other ability levels. Although this may reflect the fact that highly able women are more aware of the changing role of women in society, or more able to exercise options leading to careers demanding higher education, it is considered more likely that this effect results from higher motivation among highly able women (possibly as a result of formal or informal school or home counseling) and/or of increased recruiting/selecting of highly able women by institutions of postsecondary education. The potential for interactions among sex, race/ethnicity, and SES also exists. An alternate hypothesis of some depressing effect on high ability men is possible, but considered unlikely.

The predicted increase in college attendance attributable to SES is more than twice as large for the middle ability level than for the other ability levels. Taking the SES measure to reflect ability to afford postsecondary

education and also social class expectations, the differential prediction may be related to the overall likelihood of attendance across the ability groups (78, 46, and 21 percent, from high to low). Under these conditions it would be reasonable for SES factors to come into play to a greater extent for the middle ability students than for the high ability students (who likely receive encouragement to apply to college and have greater likelihood of acceptance because of their ability) or the low ability group (who may be discouraged from applying to college and have lower likelihood of admission).

The increase in likelihood of college attendance attributable to an academic high school background is inversely related to ability, greatest in the low ability group and least in the high ability group. The high school program in which an individual is placed is more than likely a joint function of the individual's motivation for college and high school counseling practices. Thus, those who plan for college (with or without the help of counselors) will probably be placed in an academic program. The actual incidence of academic program background is also strongly related to ability. Two factors may subsequently explain the differential prediction. First, low ability students (and to a lesser extent middle ability students) may be initially placed or subsequently transferred to a nonacademic program, with an attendant lowering of motivation for college, at higher rates than low ability students. Second, higher ability students may be encouraged more toward application and accepted at higher rates than lower ability students, regardless of their high school curricular program.

Educational expectation is the most powerful predictor of college attendance within all ability levels, but prediction is greater for high and middle ability students. One of the most plausible explanations for such a difference is the potential for less realistic expectations within the low ability group, in which only about one in five of the individuals had attended college.

While early marriage reduces the likelihood of attending college by more than ten percentage points in both the low and middle ability groups, the effect is approximately doubled for the high ability group. While it is understandable that the additional responsibilities of marriage would depress college-going rate, a rational explanation for the greater reduction in the high ability group is elusive. One possible explanation for the magnitude of differential prediction is an artifact related to the low base rate of early

marriage (less than 9 percent) in the high ability group, with an associated low variability of the marital status variable. Indeed, the discrepancies of standardized regression coefficients (which account for differing variability of the predictor variables) among the ability groups are less pronounced though still directionally consistent (see Tables A.4 through A.6).

E. Modeling College Attendance

The multiple regression approach employed in the previous subsection provides an assessment of the simultaneous direct unique relationship of the predictor variables to the outcome of college attendance. Because of the nature and extent of the covariation among the predictor variables, such relationships may be expected to differ somewhat from the simple bivariate relationships suggested in the results of Section II.C and provided explicitly in the zero order correlation coefficients (see Appendix A, Tables A.1 through A.3). In general, the two sets of relationships are similar, but some notable exceptions exist. For example, the descriptive results suggest an overall advantage in college attendance for high ability males over high ability females; however, when compensating for other male-female differences in the high ability group, the direct relationship indicates an advantage for females.

Such apparent incongruities can be investigated within a structural model, which allows a more comprehensive examination of predictor-criterion relationships. An additional investigation of the data was therefore undertaken employing path analysis as applied to the model previously presented as Figure 1.[17/] The posited model of college attendance specifies directional relationships formulated on the basis of prior knowledge and theoretical considerations.[18/] Given the model, the path analytic solution decomposes the overall directional relationship of one variable to another into (1) an indirect effect, which operates through intervening variables in the model, and (2) a direct effect, which is unique and typically corresponds to the direct relationship between the two variables as determined through a multiple regression solution. To allow comparison with the zero order correlation

17/ This is one of several structual equation analytic approaches; see, for example, Kerlinger and Pedhazur (1973) or Duncan (1975).

18/ Since path analytic results are model-dependent, the specification of the model is of obvious importance.

coefficients (Tables A.1 through A.3), the analysis was conducted using standardized variables.

The path analytic solutions for the three ability level groups are presented in Appendix A (Tables A.4 through A.6). The solution for the high ability group is presented graphically in Figure 2. The figure expresses the model by means of directional paths interrelating the set of variables considered; the only paths presented are those which are associated with statistically significant relationships and which ultimately link (directly or indirectly) with the criterion variable, college attendance. A path coefficient is associated with each path shown; these are standardized coefficients obtained in the various steps of the solution, (see Table A.6). The coefficient associated with the path leading directly from a variable of interest to the criterion variable represents the direct effect (analogous to the multiple regression coefficients given in the previous section, but in standardized form); the sum of the products of coefficients associated with paths linking through intervening variables may be taken as the indirect effect.[19/] For example, the direct effect of educational expectations on college attendance is .45 and the indirect effect is .03 (i.e., (-.21)·(-.16)).

Perhaps the most salient aspect of Figure 2 is the major role played by educational expectations not only in direct prediction but also in chanelling the indirect effects of antecedent variables to the criterion variable. For example, while high school academic program shows no direct relationship to college attendance, the indirect effect is estimated at about .12, closely approximating the overall effect of .19 indicated in the zero order correlation (Table A.3).[20/] Also, the previously identified apparent anomaly of the relationship of sex to college attendance is well explained by indirect

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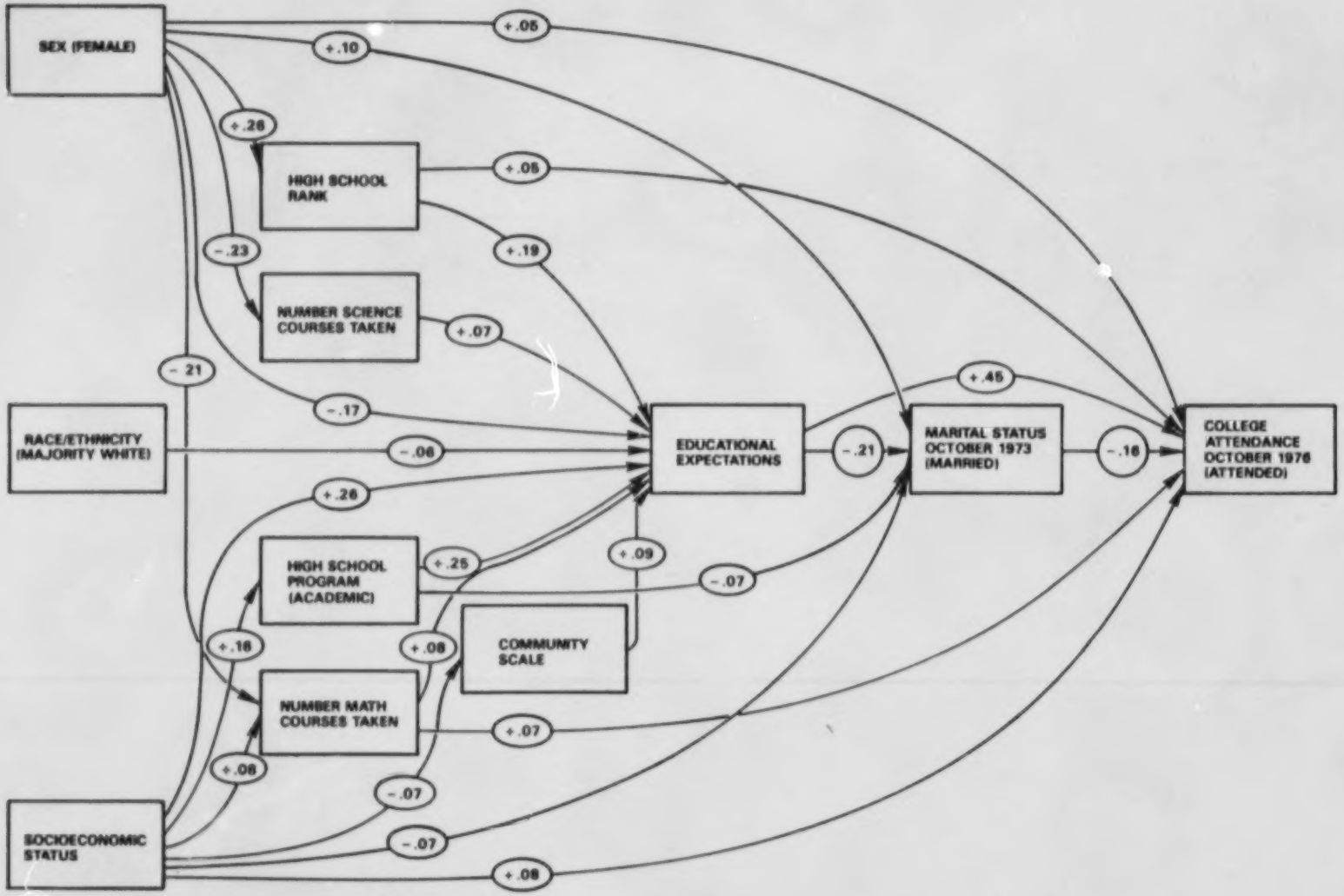
19/ Strictly speaking this simple interpretation may be somewhat misleading, primarily as a result of the inclusion of four variables in the set representing academic credentials (i.e., high school rank, number of science courses taken, number of math courses taken, and high school course of study). Relationships within this set have not been specified as directional and effectively have been assumed nondirectional. This introduces nondirectional links through which indirect effects can operate, and the potential operation of indirect effects through such nondirectional links provides an interpretational difficulty.

20/ Nondirectional links between the four academic credential variables pose some problems in interpretation.



NOTE.--Nondirectional links between the four academic credential variables pose a difficulty in interpretation.

Figure 2.--Path analytic solution of the model for college attendance

effects through expectations. While the direct effect of sex is +.05 (indicating an advantage to females), the indirect effects through early marriage (-.02) and those chanelled through expectation (-.07) offset the direct effect to an overall negative relationship (indicating an advantage to males).[21/]

The role played by educational expectation also points to a potential misspecification of the model (or more precisely to the omission of an important variable). While the measure of educational expectation was taken during the senior year in high school (at a point in time following most of the school activities contributing to the academic credential variables), it is anticipated that these expectations reflect to a large degree previous expectations (which could antedate the academic credential variables). To the extent that that this is true, educational expectation is perhaps misplaced in the directional flow of the model.

A comparison of the path analytic solution for high ability students with those of other ability levels can be made by reference to Tables A.4 through A.6. Direct effect differences have been discussed in the previous section; however, some indirect differences also exist. Nonetheless, the patterns of relationships among the ability level groups show considerably greater similarity than difference.

21/ Indirect effects operating through the academic credential variables that are not chanelled through expectations are effectively zero.

III. ACTIVITIES IN 1976

A second series of analyses examined the current activities of individuals as a function of college attendance and ability level, to compare life outcomes for the talent loss group to those of other ability levels who did not attend college and to suggest potential effects of nonattendance among highly able (and other ability level) students. The constructs considered in these analyses were those considered of major importance in subsequent life objectives and addressable from available NLS data: family formation, job attainment, and job satisfaction. These topics are treated separately in the following subsections.

Results are provided for both the college and noncollege groups; however, it should be recognized that the results apply to a point in time that is still relatively early in the adult life of the high school class of 1972 and that neither occupational nor family patterns can be assumed to have stablized for some groups (particularly among those who attended college). Moreover, insufficient time had elapsed since high school graduation to allow individuals to attain entry to professional careers requiring considerable postsecondary training. Consequently, the more meaningful comparisons for most of these analyses are those between ability levels within the noncollege group.

A. Family Formation

Table 5 presents three indices of family formation for the college and noncollege groups within each ability level: (1) percent who had been married by October 1976, (2) percent who were parents by October 1976, and (3) the ratio of (2) to (1), which reflects the conditional parenthood rate among those married.[22/] Those in the talent loss group were somewhat less likely to have married by October 1976 than those in noncollege groups at other ability levels (although the difference is marginally nonsignificant in comparing to the low ability level). Also, as might be expected, highly able people who did not attend college were twice as likely as their college-attending counterparts to have married within four and one-half years after high school.

22/ Interpretation of the ratio as a conditional rate is not strictly appropriate, since it does not account for unmarried parents.

Table 5.--Family formation indices as a function of ability level and college attendance

Index considered	Ability and college attendance					
	High ability		Middle ability		Low ability	
	College	No college	College	No college	College	No college
Percent married by October 1976	26	53*	34	59*†	36	58
Percent parents by October 1976	5	27*	10	32*	21	58*†
Ratio of parenthood to marriage rate[a/]	.19	.51	.29	.54	.58	1.00

* Percentages for the college and noncollege groups are statistically different at the .01 level of significance.

† Percentage differs statistically from the high ability noncollege group at the .01 level of significance.

a/ Standard errors were not computed for these ratios.

NOTE.--Sample sizes for subgroups (cells) are the same as those given in Table 1.

The difference in 1976 marriage rates between the high ability college and noncollege groups, about 25 percentage points, is quite similar for the middle and low ability levels. Further, the differences between the college and noncollege groups are higher, by about five percentage points, than analogous differences observed for the 1973 marriage rates (see Table 1), suggesting an accelerated rate of marriage in all noncollege groups from 1973 to 1976, as compared to those who attended college. These 3-year marriage rates can be expressed as conditional percentages of those who married during the 3-year period in ratio to those who had not married prior to 1973. For those who attended college, these conditional rates are approximated[23/] as 23, 29, and 26 percent for high, middle, and low ability levels, respectively.

23/ Conditional rates are estimated as

$$r = 100 \left[\frac{p_{76} - p_{73}}{1 - p_{73}} \right] ,$$

where r is the 3-year conditional rate, p_{76} is the proportion who had married by October 1976, and p_{73} is the proportion married by October 1973.

Comparable conditional rates for those who did not attend college are about twice as great (46, 51, and 40 percent). Differences in the 3-year marriage rate between the college attendance groups are markedly greater than those among ability levels within a college attendance category.

Differences in the incidence of parenthood are also indicated in Table 5. Parenthood rates vary much more dramatically than marriage rates over ability levels. Those in the talent loss group are much less likely (by a factor of one-half) to have become parents by October 1976 than the low ability noncollege group, and slightly less likely than the middle ability group. Even among those who attended college the parenthood rate increases with decreasing ability; however, those who did not attend college are much more likely to have one or more children by 1976 than those who attended, regardless of ability level.

Since parenthood rates are typically confounded with marriage rates, conditional parenthood probabilities (ratios of parenthood rate to marriage rate) were computed to facilitate interpretation. The conditional parenthood probabilities shown in Table 5 decrease monotonically with increasing ability, for both the college and noncollege groups; and, within each ability level, are approximately twice as large for those in the noncollege group. While the conditional parenthood probabilities for the high ability level are less than those for other ability levels, they do not differ greatly from those of the middle ability level. Probabilities for both of these levels, however, differ dramatically from those for low ability, which are approximately twice as great for both those who attended college and those who did not.

While the 1976 family formation indices reflect to some extent the early marriage (1973) rates presented previously (Table 1), they clearly point out a strong relationship between college attendance and family formation. There are, of course, real difficulties in combining the pursuit of higher education with support of a family, and an explicit or implicit choice between one or another of these alternatives quite likely underlies the findings of differences between college goers and nongoers at all ability levels. Differences among ability levels probably reflect well-established relationships between SES and ability on the one hand and SES and marriage patterns on the other, but also may indicate that a more conscious or deliberate choice is exercised by the highly able in beginning a family or pursuing higher education.

B. Job Attainment

The measures of job attainment examined were employment status, earnings, and fulfillment of career expectations. To provide more meaningful results, persons who were full- or part-time students in October 1976 were excluded from these analyses. In interpreting the results, this exclusion should be kept in mind.

1. Employment Status

Figure 3 depicts the employment status for those who had attended college and those who had not for each ability level; the unemployed are further categorized on the basis of whether they were in (looking for work) or out (not looking for work) of the labor force. The employment status distributions for the talent loss group are quite similar to those of noncollege groups of less ability. Likewise, the distributions for those who attended college are quite similar (the apparent differences for the low ability group are not statistically significant); however, differences between college and noncollege groups within the three ability levels are more pronounced.

For all ability levels, the most obvious difference in employment status between the college and noncollege group is in the "out of labor force" component. High ability students who had not attended college were absented from the labor force at twice the rate of those who had attended; this ratio of 2 to 1 (as well as the actual percentages) is quite similar for middle ability students. Among low ability students, the difference is directionally consistent and significant but the ratio is lower. The college-noncollege differences are consonant with the findings of the previous subsection that those in the noncollege group were more likely to have married and to have become parents by October 1976. As such, it could be expected that more of the noncollege group would be engaged in full-time homemaking.

Of the percentages shown in Figure 3, the relative number of individuals who are unemployed and looking for work is consistently greater in the college group but is significantly different (and only marginally so) only within the high ability group; the difference in the relative numbers employed is significant only within the middle ability group. Given the differences between the college and noncollege groups in percentages out of the labor force, however, interpretation of these differences can be misleading. Employment rates can be interpreted more meaningfully by excluding those who are not in the work

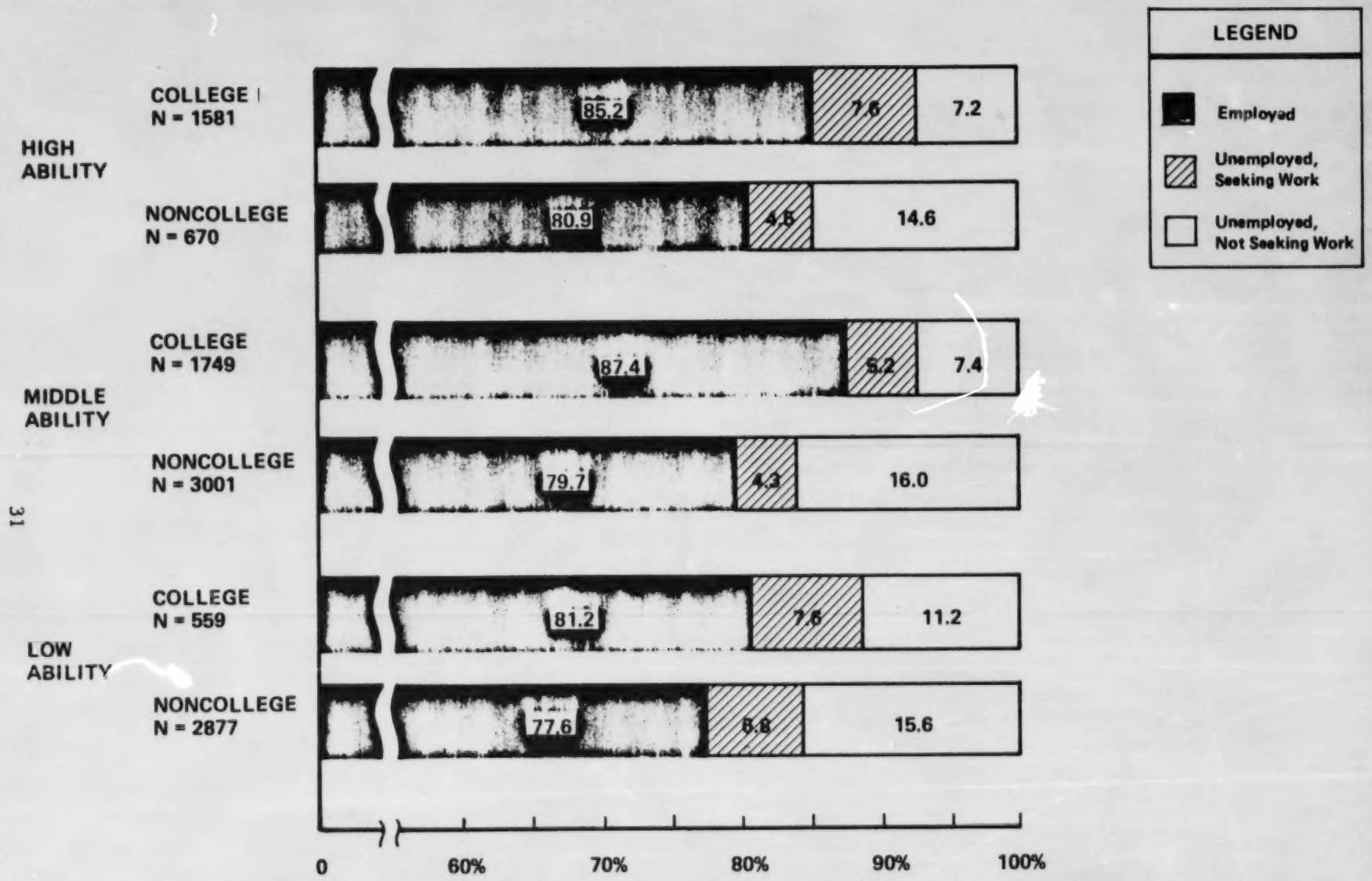


Figure 3.--Employment status by ability category and college attendance

force. Such conditional rates[24/] indicate overall employment of about 93 percent (± 2 percent) in the six groups considered, suggesting no major differences within or among ability levels.

2. Hours Worked and Earnings

For those who were employed (full-time or part-time), average hours worked and earnings per week were computed; results are given in Table 6. Hours worked per week averages slightly greater than 40 for all ability levels, and does not differ markedly between college and noncollege groups. Standard deviations for hours worked are likewise similar, suggesting no major differences in the distributions of hours worked as a function of ability or of college attendance. Given a fairly standard work week and the exclusion from these analyses of those still in school, such a result is not particularly surprising.

Average weekly earnings are also fairly consistent (ranging from about $168 to $176 dollars) regardless of ability or college attendance. At first glance, this result may seem somewhat counterintuitive; however, several factors (including the time point considered and group definitions) could contribute to this lack of difference. First, as mentioned previously, those preparing for professional positions requiring longer schooling (and typically representing higher earnings) were probably still in college. Further, those who attended only trade or business school were included in the noncollege group for purposes of this report. Also, those in the noncollege group were likely to be substantially further along in their careers than those in the college group. Those who had completed a 4-year college program would be just starting in a job in October 1976, while those who began work on receipt of their high school diploma could be about four and one-half years into a job. Even those who had some college but left before completing their degrees or those who graduated from 2-year programs would have had less time on the job (by about a factor of one-half). Moreover, there are quite likely individuals

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[24/] Conditional employment rates can be obtained from the values in Figure 3 as

$$r = 100[p/(1-p^*)]$$

where r is the conditional rate, p is the raw employment proportion from Figure 3, and p^* is the proportion of individuals not in the work force from Figure 3.

Table 6.--Hours of work and earnings per week as a function of ability level and college-attendance status

	High		Middle		Low	
	Non-college	College	Non-college	College	Non-college	College
Hours/week						
Mean	41.45	40.35	41.06	40.46	41.60	40.37
Standard deviation	9.36	9.71	9.10	9.34	9.14	8.23
Sample size	545	1333	2373	1521	2219	440
Earnings/week						
Mean	$175.32	$167.55	$171.59	$175.58	$172.64	$172.32
Standard deviation	102.84	74.08	99.82	117.88	126.64	155.17
Sample size	532	1316	2331	1489	2177	430

NOTE.--Computed only for those employed full- or part-time and not still in school.

in these latter categories who were working temporarily to finance a future continuation of their education.

On balance, it is simply too soon in the careers of these young adults to adequately assess the relationship of college attendance or ability to earnings. It is unreasonable to expect that the well-established relationship of college attendance to earnings will not ultimately emerge. Similarly, ability might be expected to influence advancement more than initial salary. When earnings data that reflect several years' additional employment become available, these relationships may be examined more meaningfully.

3. Attaining Career Goals

Job attainment was also examined in a cross-tabulation of type of job held in October 1976 and career goal as indicated in 1972. Occupational categories considered were: (a) professional/technical; (b) managerial/administrative; (c) clerical; (d) crafts; and (e) other.[25/] Results for the noncollege groups are summarized in Table 7. Results for those who attended college are provided in Appendix A (Table A.7). These data should be interpreted with caution, since the categorizations of career goals and that of

25/ This category reflects a rather broad diversity of occupations; however, it was necessitated by the very small number of cases in logically related categories other than those listed in (a) through (d).

Table 7.--Job attainment as related to career goals for those not attending college, for three ability levels

Job attained (1976)[a]	Career goal (1972)[b]														
	High ability					Middle ability					Low ability				
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
A. Professional or technical	18	8	4	6	12	13	0	4	2	4	9	2	5	1	4
B. Managerial or administrative	7	32	5	9	15	6	19	2	10	7	9	16	3	6	6
C. Clerical	29	3	77	8	12	31	26	70	9	20	23	5	59	4	15
D. Crafts	10	22	1	37	26	11	22	3	41	17	11	18	4	37	20
E. Other	35	35	13	40	35	39	33	21	37	52	49	59	29	51	54
Total[c]	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Sample size	216	14	98	43	117	516	52	476	273	54	233	27	297	197	443

[a] Job attained was defined on the basis of the Occupational Classification System (see Table A.8 for detail).

[b] Career goals were defined on the basis of responses to an explicit set of alternatives in the base-year questionnaire (see Table A.8 for detail).

[c] Columns may not sum to 100 percent due to rounding error.

NOTE.--Percentages given are rounded to the nearest unit and represent column percentages (i.e., the percentage of individuals in an ability level group and with a specified 1972 career goal who attained a particular job classification in 1976). Job classifications are specified in the row labels together with a letter identification; for convenience, only the letter identification is used in the column labels.

type of job attained are differently based.[26/] Moreover, because of the broad categorization of careers, an individual who planned to become an engineer but instead became a teacher would still fall in the same category (professional/technical) as another who planned for and actually found work as an engineer. Also, it is still early in the career of these individuals, and data are not available to determine if respondents are actively planning to change jobs or seek further training in the near future.

Even in light of these limitations, and additional limitations of small sample sizes for some of the subgroups considered, it is fairly obvious from Table 5 that relatively few of the noncollege group had attained the occupational goal they aspired to as seniors in high school. Excluding the "other" category (which is in actuality only a residual classification), only among those who aspired to clerical positions had a majority of individuals actually realized their career goals. Although not explicit in Table 7, the talent loss group aspired to professional/technical occupations at somewhat higher rates (about 43 percent) than the middle ability noncollege group and at more than twice the rate of the low ability noncollege group. Moreover, irrespective of career goal, noncollege individuals of high ability had attained professional/technical positions at higher rates than those of lesser ability.

Among those attending college (Table A.7), much larger percentages of individuals had aspired to professional/technical occupations within each of the ability levels, and among those so aspiring, greater percentages (by factors of at least 2) had attained such positions.[27/] As with the noncollege group both aspiration for and attainment of professional/technical occupations decrease with decreasing ability. An explicit comparision of college and noncollege groups at the high ability level is also provided in Appendix A (Table A.8).

[26/] Respondents used an explicit set of categories to indicate career goals in 1972, while job attained in 1976 was a categorization of job classification according to the Occupational System used by the Bureau of the Census (see Levinsohn et al., 1978, Appendix C).

[27/] Ignoring career goals and considering only job category attained by 1976, fully one-third of the highly able persons with prior college experience had attained professional or skilled technical positions, while only 12 percent of those without college experience worked in such positions (see Table A.7).

C. Job Satisfaction

Satisfaction ratings were obtained from NLS third follow-up respondents on several facets of their job situations in October 1976. Ratings of the three ability levels within the noncollege group are presented in Table 8. Comparable ratings for those who attended college are given in Appendix A (Table A.9). Individuals still in school were also excluded from these analyses.

These results are, in general, rather sterile; for all job facets and all ability levels, in both the college and noncollege groups the modal response is mild satisfaction. Some differences exist in expressed satisfaction among the various facets of current job (least satisfaction with opportunity for promotion and greatest satisfaction with respect from others for being in the line of work); however, the distributions of satisfaction ratings for a given facet of the job are remarkably similar among the ability levels and between the college and noncollege groups. College-educated individuals are more likely than noncollege individuals to indicate the extremes of "very satisfied" or "very dissatisfied," but overall there is no appreciable difference in job satisfaction between the two groups. While the lack of diversity of response may reflect, to some extent, the relatively short time most individuals have been working, it is believed that technical problems in the measurement of satisfaction (e.g., response set, prepotency of categories, and halo effect) present a more likely explanation.

Table 8.--Satisfaction ratings of facets of current job by those who did not attend college, for three ability levels

Facet of job[a/]	Ability Level	Satisfaction Rating				Total
		Very satisfied	Satisfied	Dis-satisfied	Very dis-satisfied	
Pay and fringe benefits	High	21	56	18	5	100
	Middle	22	55	17	6	100
	Low	20	54	19	7	100
Importance and challenge	High	19	51	23	6	100
	Middle	22	54	18	6	100
	Low	19	60	15	6	100
Working conditions	High	26	56	15	3	100
	Middle	25	56	15	4	100
	Low	20	58	16	5	100
Opportunity for promotion with this employer	High	16	45	27	13	100
	Middle	18	44	28	10	100
	Low	18	46	26	10	100
Opportunity for promotion in this line of work	High	21	46	23	9	100
	Middle	20	48	24	8	100
	Low	18	46	26	9	100
Opportunity to use past education	High	20	47	25	9	100
	Middle	20	51	20	9	100
	Low	17	55	20	8	100
Security and permanence	High	37	48	11	4	100
	Middle	33	51	12	4	100
	Low	24	57	13	5	100
Supervisors	High	29	51	13	7	100
	Middle	30	53	12	5	100
	Low	23	58	12	6	100
Opportunity for developing new skills	High	23	45	26	6	100
	Middle	24	46	23	7	100
	Low	23	50	21	7	100
Job as a whole	High	24	57	17	3	100
	Middle	26	58	13	3	100
	Low	24	59	12	5	100
Pride and respect received from family and friends by being in this line of work	High	27	59	12	2	100
	Middle	29	61	7	2	100
	Low	31	59	8	2	100

[a/] From Third Follow-Up Questionnaire, Item 21.

NOTE.--Row percentages are given, rounded to the nearest percent and may not sum to 100 percent due to rounding error. Due to deletion of cases with missing data, row N's range from 524-537 for high ability level, 2261-2295 for middle ability level, and 2027-2068 for low ability level.

IV. SUMMARY AND DISCUSSION

This study has addressed two basic issues of talent loss among young adults: (1) the determinants of college nonattendance by highly able students and (2) some short-term consequences of nonattendance among these students as compared to less able students who did not attend college. Of particular concern was the determination of whether influences on and results of college attendance were unique to highly able students or simply reflections of more general influences applicable to those of other ability levels. In general, study findings indicate that the effects on and of college attendance are basically similar for all ability levels. Where differences exist, they are quantitative rather than qualitative, suggesting that similar factors affect and are affected by college attendance but that they operate and are operated upon to a different extent for the highly able student.

A. Potential Determinants of College Attendance

Three approaches to analysis were undertaken in examining potential determinants of college attendance: (1) descriptive comparison, indicating univariate differences between the college and noncollege groups irrespective of differences that exist on concomitant variables; (2) multiple regression analysis, indicating the unique direct effects of each variable when considered simultaneously with other variables, and (3) path analysis, indicating both the direct and indirect effects of variables, within a specified model of college attendance. In total, these analyses present a comprehensive and consistent set of results.

Although highly able students, as a group, entered college at a markedly higher rate than less able students, the talent loss problem was significant; more than one in five of those in the upper ability quartile of 1972 high school graduates had not attended college by October 1976. The factors associated with college attendance, however, were similar regardless of ability level. Students tended to enter college in lower relative numbers if they were of lower SES, had a less adequate high school background, and had lower expectations for eventual educational attainment. Also, early marriage was

associated with college nonentry. Educational expectation was the most powerful predictor of college attendance at all ability levels; however, since expectation was measured during the spring term of the senior year of high school, it probably reflected, in at least some cases, knowledge of successful college application and certainly reflected knowledge of nonapplication. Among the academic credential variables, only number of high school science courses failed to show a unique relationship to college attendance. Race/ethnicity and life values (as measured in this study) also were not uniquely related to college attendance at any ability level.

Some notable differences in predicted college attendance were observed among highly able students. When other factors were controlled, sex was related to college attendance exclusively at the high ability level, indicating that men were less likely to enter college than women. When indirect effects were considered, however, this advantage to women was reversed. Alternately, only among highly able students was there no direct unique relationship of an academic high school program to increased college attendance. Considering indirect effects, however, an overall advantage in college attendance to those in an academic high school program was observed for those in the high ability group as well as for other ability levels. It is considered likely that both of these differences were related to factors not measured in this study; in the first case, to recently increased recruiting of highly able women and, in the second case, to formal or informal counseling of highly able students to attend college regardless of high school course of study.

Most of the differential unique prediction of college attendance among ability levels was a matter of degree. Educational expectation was markedly less predictive for low ability students, suggesting more realistic expectations for high ability students. The depressing unique effect of early marriage on college attendance was about twice as great among highly able students than at other ability levels, possibly indicating the exercise of more conscious or deliberate choices by those of high ability between beginning a family or pursuing higher education. Also, the unique effect of SES on college attendance was twice as great for the middle ability group than for high (or low) ability students. This finding is not particularly surprising, since one might expect SES influences (e.g., ability to fund a college education and

social class expectations) to come into play more dramatically for groups in which college entry decisions are less predictable by ability alone.

There are several implications, suggesting further research on why highly able students do not attend college, indicated by the findings of this study. Clearly some high ability individuals do not expect to attend college, others expect to attend but do not. The reasons for lack of expectation or for not realizing expectations among the highly able deserve attention. It is likely that the tight labor market for college graduates coupled with the high cost of a college education may lead students to believe that a college education is not a good investment (Freeman and Holloman, 1975). There is also a strong indication that these students see marriage and full-time student status as incompatible. Both of these potential reasons represent areas that could be addressed through appropriate counseling.

There are other areas suggesting a need for coordinated counseling of the highly able high school student. It seems likely that some of these students do not obtain proper academic credentials for admission to the college of their choice, which may reflect improper guidance. Educators would be well advised to examine whether many of the able young people were wrongly advised to enter a nonacademic track or were not adequately encouraged to take more science and mathematics courses. Finally, the direct unique relationship between SES and college attendance suggests that some highly able students may not be attending college for financial reasons. Although need to work in order to support the family is a persistent inhibitor of continued education, the actual financing of education is facilitated by several programs for needy students. Effective counseling should ensure that the able student is fully aware of the many financial options that exist.

B. Consequences of College Nonattendance

The examination of the consequences of college nonattendance was less revealing, probably due to the relatively early period in the adult life of these young people (i.e., four and one-half years after high school graduation) at which the outcomes were measured. The few observed differences in life outcome typically were more strongly related to college attendance than to ability level.

Some rather intuitive relationships existed between college attendance and family formation. Highly able students who did not attend college had

married at about twice the rate of their cohorts who attended college, a relationship quite similar to that for other ability levels. Similarly, parenthood rates were considerably greater in the noncollege group at all ability levels, and such rates were inversely related to ability regardless of college attendance.

Highly able students who did not attend college tended to define themselves out of the work force at greater rates than the college-going group (but at similar rates to those of less ability who did not attend college), a factor probably related to higher marriage rates in the noncollege group and thus relatively more individuals describing themselves as full-time homemakers. Considering only those in the work force, however, employment rates did not differentiate the college and noncollege groups or the various ability levels. The highly able students who had not attended college generally were more likely than noncollege groups of lower ability to have aspired to and attained professional or technical positions. Also, a larger proportion of those with college experience were employed in professional or technical positions. Other occupational outcomes (job satisfaction, attaining career goals, hours worked, earnings) suggested few marked or systematic differences between college and noncollege groups or among ability levels.

The findings regarding occupational outcomes obviously are restricted by temporal factors. Those who did not attend college potentially had a much greater time in the work force than the college-going group (those who completed a nonaccelerated 4-year college program would have been in the work force only about half a year at the time of data collection). Additionally, those still in college were excluded from analyses. While this provides a more meaningful analysis, it also introduces a clear bias into the findings. Those who were pursuing an occupation requiring professional or graduate school attendance (typically representing higher paid occupations) were quite likely still in school and were not represented in the findings. Allowing additional time for entry of these individuals into the work force, and for advancement among those who had entered at the time of this study, should provide for results that more closely reflect the established advantages of a college education and that are more likely to tap effects of ability in the occupational setting.

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Appendix A

Supplementary Tables

Table A.1.--Correlation coefficients among selected variables (low ability level)

Variable[a/]	SEX	RACE	SES	HSP	RANK	TOTMATH	TOTSCI	WORK	FAMILY	COMM	EXP	M73
Sex (SEX)												
Race/ethnicity (RACE)	-.06*											
Socioeconomic status (SES)	-.06*	.36*										
High school program (HSP)	-.03	-.10*	.11*									
High school class rank (RANK)	.20*	-.10*	-.05*	.15*								
Total math courses (TOTMATH)	-.12*	-.08*	.05*	.20*	.08*							
Total science courses (TOTSCI)	-.11*	-.05*	.02	.19*	.06*	.45*						
Work scale (WORK)	-.14*	-.08*	-.02	.03	-.02	.03	.03					
Family scale (FAMILY)	.03	-.01	-.02	-.01	.03	-.02	-.03	.14*				
Community scale (COMM)	-.02	-.23*	-.11*	.10*	.07*	.07*	.08*	.27*	.13*			
Educational expectation (EXP)	-.04*	-.19*	.12*	.27*	.19*	.18*	.14*	.06*	.03	.21*		
Marital status 1973 (M73)	.17*	.04*	-.08*	-.09*	-.00	-.09*	-.05*	-.04*	.04*	.03	-.16*	
College attendance	.01	-.13*	.11*	.25*	.20*	.17*	.11	.01	.00	.09*	.45*	-.16*

*Indicates the coefficient is statistically different from zero at the .01 level of significance.

a/ Variables are specified in the row labels together with a short mnemonic; for convenience, only the mnemonic is used in the column labels.

NOTE.--The correlation between a dichotomous variable (the first two, fourth, and last two listed in row labeling) and a continuous variable (those remaining) is a Point Biserial Coefficient, which cannot assume the full range of a standard (Pearson) correlation coefficient. Correlations among dichotomous variables are Phi Coefficients, which, while assuming the full range, are subject to certain anomalies. The signs of all Point Biserial and Phi Coefficients reflect the arbitrary coding (0 or 1) of the dichotomous variables; categories coded 1 are: SEX, female; RACE, majority white; HSP, academic; M73, married; and COLLEGE ATTENDANCE, attended.

Table A.2.--Correlation coefficients among selected variables (middle ability level)

Variable[a/]	SEX	RACE	SES	HSP	RANK	TOTHATH	TOTSCI	WORK	FAMILY	COMM	EXP	M73
Sex (SEX)												
Race/ethnicity (RACE)	-.01											
Socioeconomic status (SES)	-.06*	.23*										
High school program (HSP)	-.06*	-.04	.22*									
High school class rank (RANK)	.27*	-.06*	-.07*	.17*								
Total math courses (TOTHATH)	-.22*	-.05*	.14*	.36*	.08*							
Total science courses (TOTSCI)	-.16*	-.02	.11*	.36*	.10*	.50*						
Work scale (WORK)	-.20*	-.05*	-.02	.04	-.03	.07*	.03					
Family scale (FAMILY)	.05*	.02	-.06*	-.01	.09*	.01	-.00	.16*				
Community scale (COMM)	.01	-.14*	-.10*	.08*	.07*	.02	.02	.23*	.16*			
Educational expectation (EXP)	-.13*	-.12*	.29*	.47*	.20*	.31*	.28*	.07*	-.02	.15*		
Marital status 1973 (M73)	.19*	.03	-.14*	-.16*	.03	-.13*	-.10*	-.07*	.03	.01	-.27*	
College attendance	-.06*	-.07*	.28*	.37*	.20*	.24*	.22*	.03	-.01	.08**	.59*	-.26*

*Indicates the coefficient is statistically different from zero at the .01 level of significance.

a/ Variables are specified in the row labels together with a short mnemonic; for convenience, only the mnemonic is used in the column labels.

NOTE.--The correlation between a dichotomous variable (the first two, fourth, and last two listed in row labeling) and a continuous variable (those remaining) is a Point Biserial Coefficient, which cannot assume the full range of a standard (Pearson) correlation coefficient. Correlations among dichotomous variables are Phi Coefficients, which, while assuming the full range, are subject to certain anomalies. The signs of all Point Biserial and Phi Coefficients reflect the arbitrary coding (0 or 1) of the dichotomous variables; categories coded 1 are: SEX, female; RACE, majority white; HSP, academic; M73, married; and COLLEGE ATTENDANCE, attended.

Table A.3.--Correlation coefficients among selected variables (high ability level)

Variable[a/]	SEX	RACE	SES	HSP	RANK	TOTMATH	TOTSCI	WORK	FAMILY	COMM	EXP	M73
Sex (SEX)												
Race/ethnicity (RACE)	-.01											
Socioeconomic status (SES)	-.06*	-.05*										
High school program (HSP)	-.04	-.04	.18*									
High school class rank (RANK)	.25*	.00	.04	.20*								
Total math courses (TOTMATH)	-.21*	-.03	.09*	.33*	.16*							
Total science courses (TOTSCI)	-.23*	.00	.06*	.30*	.11*	. .51*						
Work scale (WORK)	-.17*	.02	-.04	.02	-.01	.07*	.06*					
Family scale (FAMILY)	.05*	.04	-.06*	.03	.10*	.03	-.02	.22*				
Community scale (COMM)	.04	-.06*	-.06*	.05*	.04	.02	.02	.21*	.16*			
Educational expectation (EXP)	-.16*	-.06*	.32*	.41*	.23*	.29*	.27*	.06*	-.00	.10*		
Marital status 1973 (M73)	.16*	.03	-.16*	-.16*	-.03	-.12*	-.14*	-.04	.05*	.01	-.27*	
College attendance	-.07*	-.04	.27*	.27*	.19*	.22*	.17*	.02	.01	.07*	.55*	-.30*

* Indicates the coefficient is statistically different from zero at the .01 level of significance.

a/ Variables are specified in the row labels together with a short mnemonic; for convenience, only the mnemonic is used in the column labels.

NOTE.--The correlation between a dichotomous variable (the first two, fourth, and last two listed in row labeling) and a continuous variable (those remaining) is a Point Biserial Coefficient, which cannot assume the full range of a standard (Pearson) correlation coefficient. Correlations among dichotomous variables are Phi Coefficients, which, while assuming the full range, are subject to certain anomalies. The signs of all Point Biserial and Phi Coefficients reflect the arbitrary coding (0 or 1) of the dichotomous variables; categories coded 1 are: SEX, female; RACE, majority white; HSP, academic; M73, married; and COLLEGE ATTENDANCE, attended.

Table A.4.--Standardized regression solutions for the model of college attendance (low ability level)

Predictor variables[a/]	Criterion variables[a/]									
	HSP	RANK	TOTMATH	TOTSCI	WORK	FAMILY	COMM	EXP	M73	COLLEGE ATTENDANCE
Sex--female (SEX)[b/]	-.03	.20	-.13*	-.10*	-.14*	.02	-.02	-.07	.17*	-.02
Race/ethnicity--majority white (RACE)[b/]	-.13*	-.08*	-.12*	-.04	-.09*	-.02	-.23*	-.22*	.05	-.06
Socioeconomic status (SES)	.18*	-.00	.12*	.03	-.01	.02	-.05	.20*	-.12*	.05
High school program--academic (HSP)[b/]					.02	-.00	.06	.16*	-.04	.13*
High school class rank (RANK)					-.04	.03	.04	.15*	-.00	.10*
Total math courses (TOTMATH)					.04	-.01	-.02	.07	-.00	.08*
Total science courses (TOTSCI)					-.02	-.03	.06	.03	.02	-.01
Work scale (WORK)								-.02	-.06	-.03
Family scale (FAMILY)								.04	.05	-.04
Community scale (COMM)								.17*	.05	.03
Educational expectation (EXP)									-.13*	.36*
Marital status 1973--married (M73)[b/]										-.11*
R^2 - Coefficient of determination	.03*	.05*	.03*	.01*	.03*	.00	.07*	.21*	.09*	.28*

*Indicates the coefficient is statistically different from zero at the .01 level of significance.

a/ Variables are specified in the row labels together with a short mnemonic; for convenience, only the mnemonic is used in the column labels.

b/ Variables indicated are dichotomous classifications that have been coded 0, 1; the category coded as 1 is indicated.

NOTE.--Table entries indicate the direct prediction of specific variables in the model (column variable) by all antecedent variables in the model (row variables).

Table A.5.--Standardized regression solutions for the model of college attendance (middle ability level)

Predictor variables[a]	Criterion variables[a]									
	HSP	RANK	TOTMATH	TOTSCI	WORK	FAMILY	COMM	EXP	M73	COLLEGE ATTENDANCE
Sex--female (SEX)[b]	-.05*	.28*	-.23*	-.16*	-.21*	.03	.02	-.11*	.15*	-.01
Race/ethnicity--majority white (RACE)[b]	-.10*	-.05*	-.08*	-.04*	-.03	.04	-.09*	-.12*	.02	-.03
Socioeconomic status (SES)	.24*	-.06*	.16*	.11*	-.01	-.07*	-.09*	.25*	-.07*	.12*
High school program--academic (HSP)[b]					.03	-.01	.10*	.31*	-.03	.10*
High school class rank (RANK)					.03	.10*	.05*	.18*	.04	.11*
Total math courses (TOTMATH)					.02	.02	-.01	.08*	-.01	.03
Total science courses (TOTSCI)					-.02	-.02	-.01	.05*	.01	.01
Work scale (WORK)								.01	-.01	-.02
Family scale (FAMILY)								-.04*	.01	.01
Community scale (COMM)								.12*	.04	.00
Educational expectation (EXP)									-.23*	.45*
Marital status 1973--married (M73)[b]										-.09*
R^2 - Coefficient of determination	.06*	.09*	.08*	.04*	.04*	.02*	.03*	.34*	.11*	.40*

* Indicates the coefficient is statistically different from zero at the .01 level of significance.

[a] Variables are specified in the row labels together with a short mnemonic; for convenience, only the mnemonic is used in the column labels.

[b] Variables indicated are dichotomous classifications that have been coded 0, 1; the category coded as 1 is indicated.

NOTE.--Table entries indicate the direct prediction of specific variables in the model (column variable) by all antecedent variables in the model (row variables).

Table A.6.--Standardized regression solutions for the model of college attendance (high ability level)

Predictor variables[a]	Criterion variables[a]									
	HSP	RANK	TOTMATH	TOTSCI	WORK	FAMILY	COMM	EXP	M73	COLLEGE ATTENDANCE
Sex--female (SEX)[b]	-.04	.26*	-.21*	-.23*	-.18*	.02	.05	-.17*	.10*	.05*
Race/ethnicity--majority white (RACE)[b]	-.04	.01	-.04	.01	.01	.04	-.04	-.06*	.03	-.00
Socioeconomic status (SES)	.16*	.04	.08*	.04	-.06*	-.07*	-.07*	.26*	-.07*	.08*
High school program--academic (HSP)[b]					-.01	.03	.03	.25*	-.07*	.02
High school class rank (RANK)					.03	.06*	.00	.19*	.01	.05*
Total math courses (TOTMATH)					.04	.05	.04	.08*	.01	.07*
Total science courses (TOTSCI)					.01	-.06*	-.00	.07*	-.05	-.02
Work scale (WORK)								.02	-.03	-.01
Family scale (FAMILY)								-.03	.03	.01
Community scale (COMM)								.09*	.02	.02
Educational expectation (EXP)									-.21*	.45*
Marital status 1973--married (M73)[b]										-.16*
R^2 - Coefficient of determination	.03*	.07*	.05*	.06*	.04*	.02*	.01*	.30*	.11*	.34*

* Indicates the coefficient is statistically different from zero at the .01 level of significance.

[a] Variables are specified in the row labels together with a short mnemonic; for convenience, only the mnemonic is used in the column labels.

[b] Variables indicated are dichotomous classifications that have been coded 0, 1; the category coded as 1 is indicated.

NOTE.--Table entries indicate the direct prediction of specific variables in the model (column variable) by all antecedent variables in the model (row variables).

Table A.7.--Job attainment as related to career goals for those who attended college, for three ability levels

Job attained (1976)[a]	Career goal (1972)[b]														
	High ability					Middle ability					Low ability				
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
A. Professional or technical	38	17	19	11	21	34	15	12	8	19	19	11	10	21	11
B. Managerial or administrative	10	28	4	13	18	7	24	7	16	10	11	16	5	21	16
C. Clerical	22	14	62	10	21	24	17	73	7	20	29	22	60	4	11
D. Crafts	6	4	2	36	6	7	8	9	24	15	10	26	7	19	14
E. Other	25	36	14	30	35	27	36	7	45	36	31	24	17	35	48
Total[c]	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Sample size	985	40	50	32	141	808	55	115	45	218	129	8	45	14	66

[a] Job attained was defined on the basis of the Occupational Classification System (see Table A.8 for detail).

[b] Career goals were defined on the basis of responses to an explicit set of alternatives in the base-year questionnaire (see Table A.8 for detail).

[c] Columns may not sum to 100 percent due to rounding error.

NOTE.--Percentages given are rounded to the nearest unit and represent column percentages (i.e., the percentage of individuals in an ability level group and with a specified 1972 career goal who attained a particular job classification in 1976). Job classifications are specified in the row labels together with a letter identification; for convenience, only the letter identification is used in the column labels.

Table A.8.--Job attainment by career goal for high ability students as a function of college attendance

Career goal (1972)[a]	College	Job attained (1976)[a] A	B	C	D	E	Row marginal	Row N
A. Professional/ technical	Yes	38/88	10/69	22/75	6/70	25/74	78	985
	No	18/62	7/32	29/41	10/28	35/47	43	216
B. Managerial/ administrative	Yes	17/2	28/9	14/2	4/2	36/5	4	40
	No	8/2	32/10	3/0	22/5	35/4	3	14
C. Clerical	Yes	19/2	4/1	62/11	2/1	14/2	4	50
	No	4/5	5/10	77/46	1/1	13/8	18	98
D. Crafts	Yes	11/1	13/3	10/1	36/16	30/4	3	32
	No	6/5	9/9	8/3	37/24	40/13	10	43
E. Other	Yes	21/7	18/18	21/10	6/10	35/15	11	141
	No	12/25	15/39	12/10	26/43	35/29	26	117
Column marginal	Yes	33	12	23	7	26		
	No	12	10	31	16	32		
Column N	Yes	432	138	282	76	320		
	No	61	45	159	70	153		

[a] Career goals were defined on the basis of base-year question 25A (BQ25), while job attained was defined on the basis of the Occupational Classification System (OCS) as follows:

Professional/technical:	BQ25 = 9 or 14; $1 \leq$ OCS $<$ 196
Managerial/administrative:	BQ25 = 6; $201 \leq$ OCS $<$ 246
Clerical:	BQ25 = 1; $301 \leq$ OCS $<$ 396
Crafts:	BQ25 = 2; $401 \leq$ OCS $<$ 581

NOTE.--Row (r) and column (c) percentages within a college attendance classification are shown in the cells as r/c. All percentages are weighted and rounded to the nearest unit. Job classifications are specified in the row labels together with a letter identification; for convenience, only the letter identification is used in the column label.

Table A.9.--Satisfaction ratings of facets of current job by those who attended college, for three ability levels

Facet of job[a/]	Ability Level	Satisfaction Rating: Very satisfied	Satisfied	Dis-satisfied	Very dis-satisfied	Total
Pay and fringe benefits	High	22	52	20	6	100
	Middle	23	51	20	6	100
	Low	19	50	21	10	100
Importance and challenge	High	27	42	21	10	100
	Middle	27	46	19	8	100
	Low	22	57	14	7	100
Working conditions	High	27	56	14	3	100
	Middle	28	54	14	4	100
	Low	25	57	11	7	100
Opportunity for promotion with this employer	High	19	43	28	10	100
	Middle	19	45	25	11	100
	Low	22	46	21	10	100
Opportunity for promotion in this line of work	High	24	44	23	9	100
	Middle	23	46	21	10	100
	Low	25	45	22	9	100
Opportunity to use past education	High	25	37	23	15	100
	Middle	25	42	19	13	100
	Low	23	45	22	10	100
Security and permanence	High	29	50	16	6	100
	Middle	30	49	14	7	100
	Low	29	52	12	6	100
Supervisors	High	32	51	10	6	100
	Middle	33	50	12	6	100
	Low	29	53	12	6	100
Opportunity for developing new skills	High	27	42	21	10	100
	Middle	29	43	20	8	100
	Low	28	47	18	8	100
Job as a whole	High	26	52	17	4	100
	Middle	28	53	15	4	100
	Low	28	54	14	4	100
Pride and respect received from family and friends by being in this line of work	High	35	48	12	4	100
	Middle	35	53	9	3	100
	Low	35	52	10	3	100

[a/] From Third Follow-Up Questionnaire, Item 21.

NOTE.--Row percentages are given, rounded to the nearest percent and may not sum to 100 percent due to rounding error. Due to deletion of cases with missing data, row N's range from 1281-1303 for high ability level, 1374-1353 for middle ability level, and 396-404 for low ability level.

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